

501.43494X00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Hiroki KANAI

Serial No.: 10/771,465

Filed: February 5, 2004

For: STORAGE DEVICE CONTROLLING DEVICE AND CONTROL METHOD
FOR STORAGE DEVICE CONTROLLING DEVICE

**PETITION TO MAKE SPECIAL
UNDER 37 CFR 1.102(d) and MPEP. §708.02, VIII**

MS Petition

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

November 10, 2004

Sir:

1. Petition

Applicants hereby petition to make this application **Special**, in accordance with 37 CFR §1.102(d) and MPEP 708.02, VIII. The present invention is a new application filed in the United States Patent and Trademark Office on February 5, 2004 and as such has not received any examination by the Examiner.

2. Claims

Applicants hereby represent that all the claims in the present application are directed to a single invention. If upon examination it is determined that all the claims presented are not directed to a single invention, Applicants will make an election without traverse as a prerequisite to the granting of special status.

3. Search

Applicants hereby submit that a pre-examination search, a copy of which is attached, has been made by a professional searcher.

The field of search covered:

<u>Class</u>	<u>Subclasses</u>	<u>Description</u>
710/		ELECTRICAL COMPUTERS AND DIGITAL DATA PROCESSING SYSTEMS: INPUT/OUTPUT
	8	. Peripheral configuration
711/		ELECTRICAL COMPUTERS AND DIGITAL PROCESSING SYSTEMS: MEMORY
	100	STORAGE ACCESSING AND CONTROL
	112	... Direct access storage device (DASD)
	117	. Hierarchical memories
	118	.. Caching
147		. Shared memory area

The above subclasses represent areas deemed to contain subject matter of interest to one or more of the search features. Please note that relevant references may be classified outside of these areas. The integrity of the search is based on the records as presented to us by the United States Patent and Trademark Office (USPTO). No further integrity studies were performed. Also a key word search was performed on the USPTO full-text database including published U.S. patent applications.

4. Copy of References

A listing of all references found by the professional searcher is provided by a Form PTO-1449 and copies of the references and the Form PTO-1449 are submitted as part of an Information Disclosure Statement (IDS) filed on even date.

5. Detailed Discussion of the References and Distinctions Between the References and the Claims

Below is a discussion of the references uncovered by the search and cited in the IDS filed on even date that appear to be most closely related to the subject matter encompassed by the claims of the present application, and which discussion particularly points out how Applicants' claimed subject matter is distinguishable over those references. All other references uncovered by the search and cited in the IDS filed on even date are **not** treated in detail herein.

a. Detailed Discussion of the References

Chilton et al. (U.S. Patent No. 6,516,390 B1) provides for Methods and Apparatus for Accessing Data within a Data Storage System. The storage system as illustrated in Figs. 2 and 3 includes a buffer circuit 68-1 interconnected between a front-end circuit 64-1 and a back-end circuit 66-1 residing on a circuit board 54-1. The buffer circuit 68-1 includes a multi-port memory 102 and cache interface logic 104. The buffer circuit 65-1 provides a direct path between the front-end and back-end circuits 64 and 66 (see column 5, lines 14-20; column 7, lines 6-8, 18-21, and 28-31; and column 9, lines 59-66 and Figs. 2 and 3).

Fukui et al. (U.S. Patent No. 6,646,947 B2) provides for a Data Transfer Control Device Semiconductor Memory Device and Electronic Information Apparatus. Discussed is a method and apparatus including a data transfer control device 11 as illustrated in Figs. 1 and 2 for controlling data transfer between first and second memory arrays based on an input control command and data transfer start addresses stored in the first and second memories and data transfer completion address output from a first address output section stored in the third memory section (see column 4, lines 25-49 and col. 8, lines 13-57).

Matsunami et al. (U.S. Patent Application Publication No. 2003/0023784 A1) provides for a Storage System Having a Plurality of Controllers. This application generally describes as illustrated in Fig. 1 a storage system 1 comprised of a plurality of disk array controllers 20 and a file server 30 (see paragraphs 17-19 and 37 and 38).

Kobayashi et al. (U.S. Patent Application Publication No. 2004/0128456 A1) provides for a Storage System and Data Backup Method for the same. As illustrated in Figs. 1 and 3 the storage system includes a network adapter 130 which includes a first processor 132 that receives a file access request and second processors that receive an access to data stored in the storage device, and a channel adapter which includes a third processor for sending data stored in the storage device, and a disk adapter for accessing data stored in the storage device (see paragraphs 31, 33-38, 53, and 54).

Tanaka et al. (U.S. Patent Application Publication No. 2004/0139168 A1) provides for a SAN/NAS Integrated Storage System. As illustrated in Figs. 1-4 and 6 a storage system 100 includes a channel adapter unit 110 for processing a command including block data and a file server unit 115 for processing a command including a file. The channel adapter unit 110 and file server unit 113 can be disposed on the same circuit board (file server board) 112 (see paragraphs 41, 43, 45 and 48-67 and Figs. 1-4 and 6).

Fujimoto et al. (JP 2003345515), assigned to Hitachi, Ltd. provides for a Disk Controller, Storage System, and Method for Controlling the same. A method of controlling transfer of data between a host and a cache memory, disk device and cache memory and a data transfer adapter means. The data transfer adapter reads the parameter stored in the memory and executes the transfer of data based on the read parameter.

b. Distinctions Between the References and the Claims

The present invention as recited in the claims is not taught or suggested by any of the above noted references whether taken individually or in combination with each other or in combination with any of the other references now of record.

The present invention as now recited in the claims is directed to a storage controlling device including a channel controller for receiving a data input/output request based on a file-name indication, a disk controller for carrying out input/output control of data stored in a storage volume, and a first memory for storing the data delivered between the channel controller and the disk controller. The channel controller includes a first processor for outputting a block-basis I/O request related to the data input/output request and controlling the first memory, a file access processor which has a second processor and a second memory controlled by the second processor and serves to control the transmission/reception of the data input/output request, a data transfer device for controlling data transfer between the first memory and the second memory, and a third memory controlled by the first processor. The second processor transmits information indicating the storage position of the data in the second memory to the first processor, the first processor writes into the third memory data transfer information containing information indicating the storage position of the data in the first memory and information indicating the storage position of the data in the second memory, and the data transfer device reads out the data transfer information from the third memory and controls the data transfer between the first memory and the second memory based on the data transfer information.

The above described features of the present invention, particularly the

provision of the channel controller including a first processor, a file access processor, a data transfer device and a third memory, wherein the second processor transmits information indicating the storage position of the data in the second memory to the first processor, the first processor writes into the third memory data transfer information containing information indicating the storage position of the data in the first memory and information indicating the storage position of the data in the second memory and the data transfer device reads out the data transfer information from the third memory and controls the data transfer between the first memory and the second memory based on the data transfer information as recited, for example, in claim 1 is not taught or suggested by any of the references of references of record whether taken individually or in combination with each other.

For example, the above described features regarding the channel controller are not taught or suggested by Chilton. As described above, Chilton provides a storage system which includes a buffer circuit interconnected between front end and back end circuits. As taught by Chilton, the buffer circuit provides a direct path between the front end and back end circuits. However, these teachings of Chilton do not anticipate or render obvious the above described features regarding the elements included in the channel controller and the functions performed by such elements as recited, for example in claim 1. Therefore, the features of the present invention as recited in the claims are not taught or suggested by Chilton.

The above described deficiencies of Chilton are also evident in each of the other references described above. Therefore, the features of the present invention as recited in the claims are not taught or suggested by any of the above described references whether taken individually or in combination with each other.

6. Fee (37 C.F.R. 1.17(i))

The fee required by 37 C.F.R. § 1.17(i) is to be paid by:

☒ the Credit Card Payment Form (attached) for \$130.00.


☐ charging Account _____ the sum of \$130.00.

A duplicate of this petition is attached.

Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of Antonelli, Terry, Stout & Kraus, LLP, Deposit Account No. 01-2135 (501.43494X00).

Respectfully submitted,

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CIB/jdc
Enclosures